

CLAIMS

What is claimed is:

1. An air cleaning apparatus, comprising:
a cabinet provided with a top panel of a predetermined area;
a blowing unit installed in the cabinet; and
a filtering unit installed in the cabinet to remove impurities from air circulated by the blowing unit.
2. The air cleaning apparatus according to claim 1, wherein said cabinet is opened at a bottom thereof, and is provided at least one sidewall thereof with an air outlet port, and said blowing unit comprises:
a fan casing having a rectangular cross-section, and provided on a sidewall thereof with an air discharging port to correspond to the air outlet port of the cabinet, said fan casing being installed in the cabinet to be drawn out from the cabinet in a horizontal direction;
a blowing fan installed in the fan casing; and
a fan motor to operate the blowing fan.
3. The air cleaning apparatus according to claim 2, wherein said fan casing is provided on both sidewalls thereof with guide grooves, and said cabinet is provided on inner surfaces of both sidewalls thereof with first guide rails to correspond to the guide grooves,
whereby said guide grooves slidably engage with the first guide rails so that the fan casing is drawn out from the cabinet in the horizontal direction.
4. The air cleaning apparatus according to claim 1, wherein said filtering unit comprises:
a filter casing installed in the cabinet under the blowing unit to be drawn out from the cabinet in a horizontal direction, said filter casing opened at a top and bottom thereof and having a rectangular cross-section; and
at least one filter installed in the filter casing.
5. The air cleaning apparatus according to claim 4, wherein said filter casing is provided on both sidewalls thereof with guide grooves, and

said cabinet is provided on inner surfaces of both sidewalls thereof with second guide rails to correspond to the guide grooves of the filter casing,

whereby said guide grooves of the filter casing slidably engage with the second guide rails so that the filter casing is drawn out from the cabinet in the horizontal direction.

6. The air cleaning apparatus according to claim 4, wherein said filter, installed in the filter casing, comprises:

a free filter mounted at a lower position in the filter casing and having a net structure with large meshes;

an electrostatic dust filter superposed on the free filter; and

a fine dust filter superposed on the electrostatic dust filter to collect fine dust particles.

7. An air cleaning apparatus, comprising:

a fan casing mounted in an upper portion of a cabinet with a blowing fan installed in the fan casing to circulate air to an air discharging port which is provided on a sidewall of the fan casing;

a filter casing mounted under the fan casing, and provided with at least one filter; and

a guide unit provided between the filter casing and an inner surface of the cabinet to support the filter casing in the cabinet so that the filter casing is drawn out from the cabinet in a horizontal direction.

8. The air cleaning apparatus according to claim 7, wherein said fan casing is provided on both sidewalls thereof with guide grooves, and

said cabinet is provided on inner surfaces of both sidewalls thereof with guide rails to correspond to the guide grooves,

whereby said guide grooves slidably engage with the guide rails so that the fan casing is drawn out from the cabinet in the horizontal direction.

9. The air cleaning apparatus according to claim 8, wherein said fan casing is exposed at a side thereof to an outside of the cabinet, allowing the fan casing to be easily removed from the cabinet.

10. The air cleaning apparatus according to claim 9, wherein said air discharging port is provided at the exposed side of the fan casing, discharging clean air to the outside of the cabinet.

11. The air cleaning apparatus according to claim 9, further comprising:
a control panel provided at the exposed side of the fan casing to control an operation of the air cleaning apparatus.

12. The air cleaning apparatus according to claim 8, further comprising:
a first power connecting unit provided between the fan casing and the inner surface of the cabinet to connect the fan casing to a power source when the fan casing is installed in the cabinet.

13. The air cleaning apparatus according to claim 8, further comprising:
an air outlet port provided on at least one of the sidewalls of the cabinet at a position to correspond to the air discharging port of the fan casing.

14. The air cleaning apparatus according to claim 7, wherein said guide unit comprises:
guide grooves and guide rails which are provided on both sidewalls of the filter casing and inner surfaces of both sidewalls of the cabinet, respectively, so that said guide grooves slidably engage with the guide rails.

15. The air cleaning apparatus according to claim 12, further comprising:
a second power connecting unit provided between the filter casing and the inner surface of the cabinet to connect the filter casing to a power source when the filter casing is installed in the cabinet.

16. The air cleaning apparatus according to claim 7, wherein said filter casing is provided at a top and bottom thereof with openings to circulate air, and
said filter, installed in the filter casing, comprises:
a free filter mounted at a lower position in the filter casing and having a net structure with large meshes;
an electrostatic dust filter superposed on the free filter; and

a fine dust filter superposed on the electrostatic dust filter to collect fine dust particles.

17. The air cleaning apparatus according to claim 7, wherein a bottom of the filter casing is spaced apart from a bottom of the cabinet, allowing air to easily flow into the filter casing.

18. The air cleaning apparatus according to claim 7, further comprising:
a control panel mounted to an upper portion of the cabinet, and provided with a control button to control an operation of the air cleaning apparatus, and a display to display an operating state of the air cleaning apparatus.

19. An air cleaning apparatus, comprising:
a cabinet provided with a flat top panel, and opened at a bottom and a side thereof to provide openings;
a fan casing installed in the cabinet to be drawn out from the cabinet in a horizontal direction through the opening provided at the side of the cabinet, and provided at a bottom and a side thereof with openings to correspond to the openings of the cabinet, wherein a blowing fan is installed in the fan casing to suck air through the opening provided at the bottom of the fan casing and to discharge the air through the opening provided at the side of the fan casing; and
a filter casing installed under the fan casing to be drawn out from the cabinet through the opening provided at the side of the cabinet, having a plurality of filters installed therein to be superposed.

20. The air cleaning apparatus according to claim 19, wherein said blowing fan comprises a Sirocco centrifugal fan which sucks air through the opening provided at the bottom of the fan casing and discharges air through the opening provided at the side of the fan casing.

21. The air cleaning apparatus according to claim 19, wherein a bottom of the filter casing is spaced apart from the bottom of the cabinet by a predetermined interval, allowing air to easily flow into the filter casing.

22. The air cleaning apparatus according to claim 19, wherein the bottom of the cabinet has an opening to allow air around the cabinet to smoothly flow into the filter casing through the opened bottom of the cabinet.

23. The air cleaning apparatus according to claim 19, further comprising:
a power source to supply power to the air cleaning apparatus;
a first power connecting unit provided between the fan casing and the cabinet to connect the fan casing to the power source when the fan casing is installed in the cabinet;
a second power connecting unit provided between the filter casing and the cabinet to connect the filter casing to the power source when the filter casing is installed in the cabinet;
and
a third power connecting unit provided in the cabinet to correspond to the first and second power connecting unit.

24. The air cleaning apparatus according to claim 23, wherein power is applied to the fan casing through the first power connecting unit to operate the blowing fan, allowing the air to be sucked from the bottom of the cabinet, passed through the filters, and discharged through the side of the fan casing.

25. The air cleaning apparatus according to claim 23, wherein power is applied to the filter casing through the second power connecting unit to operate one of the filters.

26. An air cleaning apparatus, comprising:
a cabinet having an opening at a bottom and a side thereof;
a blowing unit installed in the cabinet to be drawn in and out of the cabinet through the side opening of the cabinet, and provided with an opening at a bottom and side thereof to correspond to the bottom and side opening of the cabinet; and
a filtering unit installed under the blowing unit to be drawn in and out of the cabinet through the side opening of the cabinet.

27. The air cleaning apparatus according to claim 26, wherein the cabinet is provided with an air outlet port on sidewalls thereof.

28. The air cleaning apparatus according to claim 27, wherein the blowing unit comprises:

a fan casing having an air discharging port to correspond to the air outlet port of the cabinet;

a blowing fan installed in the fan casing; and
a fan motor to operate the blowing fan.

29. The air cleaning apparatus according to claim 28, further comprising:

first guide grooves provided on sidewalls of the fan casing;

first guide rails provided on the sidewalls of the cabinet to correspond to the guide grooves, whereby the first guide grooves slidably engage with the first guide rails so that the blowing unit is drawn in and out of the cabinet.

30. The air cleaning apparatus according to claim 26, wherein said filtering unit comprises:

a filter casing; and
a plurality of filters installed in the filter casing.

31. The air cleaning apparatus according to claim 30, further comprising:

second guide grooves provided on sidewalls of the filter casing; and

second guide rails provided on the sidewalls of the cabinet to correspond to the second guide grooves of the filter casing, whereby the second guide grooves of the filter casing slidably engage with the second guide rails so that the filtering unit is drawn in and out of the cabinet.